

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F.
Larsen

January 2005

Nebraska Summary 573: New Holland TN85DA Diesel 16-Speed

Tractor Museum

University of Nebraska-Lincoln, TractorMuseumArchives@unl.edu

Follow this and additional works at: <https://digitalcommons.unl.edu/tractormuseumlit>



Part of the [Applied Mechanics Commons](#)

Museum, Tractor, "Nebraska Summary 573: New Holland TN85DA Diesel 16-Speed" (2005). *Nebraska Tractor Tests*. 2127.

<https://digitalcommons.unl.edu/tractormuseumlit/2127>

This Article is brought to you for free and open access by the Tractor Test and Power Museum, The Lester F. Larsen at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Nebraska Tractor Tests by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

SUMMARY OF OECD TESTS 2349 and 2350—NEBRASKA SUMMARY 573

NEW HOLLAND TN85DA DIESEL

16 SPEED

POWER TAKE-OFF PERFORMANCE

Power HP (kW)	Crank shaft speed rpm	Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed (PTO speed—565 rpm)					
71.7 (53.5)	2302	4.82 (18.23)	0.470 (0.286)	14.87 (2.93)	
Maximum Power (2 hours)					
72.0 (53.7)	2262	4.78 (18.09)	0.464 (0.282)	15.08 (2.97)	
Standard Power Take-off speed (538 rpm)					
71.6 (53.4)	2192	4.76 (18.01)	0.465 (0.283)	15.05 (2.97)	

VARYING POWER AND FUEL CONSUMPTION

71.7 (53.5)	2302	4.82 (18.23)	0.470 (0.286)	14.87 (2.93)	Air temperature
63.4 (47.3)	2392	4.30 (16.29)	0.475 (0.289)	14.74 (2.90)	77°F (25°C)
47.9 (35.7)	2408	3.56 (13.48)	0.520 (0.317)	13.44 (2.65)	Relative humidity
32.2 (24.0)	2433	2.81 (10.64)	0.612 (0.372)	11.44 (2.25)	53%
16.2 (12.1)	2453	2.28 (8.62)	0.982 (0.597)	7.12 (1.40)	Barometer
--	2478	1.58 (5.97)	--	--	30.2" Hg (102.1 kPa)
--			--	--	

Maximum torque -218.4 lb.-ft. (296.1 Nm) at 1500 rpm
Maximum torque rise -33.4%
Torque rise at 1800 engine rpm -23%

Location of tests: Alma Mater Studiorum, University
Di Bologna, Via Gandolfi, 19-40057, Cadriano,
Bologna, Italy

Dates of tests: July to October, 2005

Manufacturer: New Holland Italia S.p.A. Via Leona
Xll-Zona Industriale Zipa 60035 Jesi-Italy

FUEL and OIL: Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F (15°/15°C)** 0.840
Fuel weight 6.99 lbs/gal (0.838 kg/l) **Oil** SAE 15W40
API service classification CI-4 **Oil consumption for 10 hours** 0.04 lb (16 gm) **Transmission and hydraulic lubricant** Ambra Multi G 10W30 **Front axle lubricant** Ambra Multi G

ENGINE: Make CNH Diesel **Type** four cylinder vertical **Serial No.** 176542 **Crankshaft** lengthwise **Rated engine speed** 2300 **Bore and stroke** 4.094" x 5.197" (104.0 mm x 132.0 mm) **Compression ratio** 17.5 to 1 **Displacement** 274 cu in (4485 ml) **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** one paper element **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** thermostat and variable speed fan

CHASSIS: **Type** 2WD and front wheel assist **Serial No.** HJE029100 **Tread width** rear 48.5" (1232 mm) to 76.7" (1949 mm) front: 2WD - 56.7" (1439 mm) to 63.3" (1607 mm), FWA - 48.7" (1236 mm) to 76.6" (1945 mm) **Wheel base** 2WD - 89.1" (2262 mm) FWA - 86.0" (2185 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Nominal travel speeds (30 km/h transmission) mph (km/h)** first 0.39 (0.63) second 0.58 (0.94) third 0.86 (1.38) fourth 1.27 (2.04) fifth 1.65 (2.65) sixth 2.01 (3.24) seventh 2.45 (3.94) eighth 3.00 (4.83) ninth 3.60 (5.80) tenth 4.41 (7.10) eleventh 5.34 (8.59) twelfth 5.81 (9.35) thirteenth 6.53 (10.51) fourteenth 8.66 (13.94) fifteenth 12.73 (20.49) sixteenth 18.86 (30.35) reverse 0.38 (0.61), 0.57 (0.91), 0.83 (1.34), 1.23 (1.98), 1.59 (2.56), 1.95 (3.14), 2.37 (3.82), 2.91 (4.68), 3.49 (5.61), 4.27 (6.87), 5.17 (8.32), 5.63 (9.06), 6.33 (10.18), 8.39 (13.50), 12.33 (19.85), 18.27 (29.40) **Clutch** dual dry disc operated by foot pedal **Brakes** wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 2196 engine rpm or 1000 rpm at 2260 engine rpm **Unladen tractor mass** 2WD - 6230 lb (2825 kg), FWA - 6770 lb (3070 kg)

DRAWBAR PERFORMANCE(40 km/h trans.)**BALLASTED - FRONT DRIVE ENGAGED
FUEL CONSUMPTION CHARACTERISTICS**

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
75% of Pull at Maximum Power—Five Hours 10th (3M Hi) Gear									
54.4 (40.6)	3735 (16.61)	5.46 (8.79)	2381	5.5	0.488 (0.297)	14.31 (2.82)	187 (86)	64 (18)	30.1 (102.0)
MAXIMUM POWER IN SELECTED GEARS									
7th (2M Lo) Gear									
49.9 (37.2)	6775 (30.14)	2.76 (4.44)	2411	15.0	0.569 (0.346)	12.28 (2.42)	189 (87)	63 (17)	30.3 (102.6)
8th (2M Hi) Gear									
56.6 (42.2)	6200 (27.57)	3.42 (5.51)	2389	13.3	0.547 (0.333)	12.79 (2.52)	189 (87)	61 (16)	30.3 (102.6)
9th (3M Lo) Gear									
61.0 (45.5)	5445 (24.22)	4.20 (6.76)	2355	9.4	0.540 (0.328)	12.95 (2.55)	187 (86)	63 (17)	30.3 (102.6)
10th (3M Hi) Gear									
62.2 (46.4)	4535 (20.17)	5.15 (8.28)	2262	6.4	0.524 (0.319)	13.35 (2.63)	187 (86)	61 (16)	30.3 (102.6)
11th (4M Lo) Gear									
62.1 (46.3)	3645 (16.21)	6.39 (10.29)	2289	4.9	0.532 (0.324)	13.15 (2.59)	190 (88)	63 (17)	30.3 (102.6)
12th (1 Hi) Gear									
61.4 (45.8)	3275 (14.58)	7.03 (11.31)	2287	4.2	0.532 (0.324)	13.15 (2.59)	192 (89)	63 (17)	30.3 (102.6)
13th (4 M Hi) Gear									
61.3 (45.7)	2930 (13.04)	7.84 (12.62)	2268	4.0	0.536 (0.326)	13.05 (2.57)	190 (88)	61 (16)	30.3 (102.6)
14th (2 Hi) Gear									
60.5 (45.1)	2165 (9.64)	10.47 (16.84)	2255	3.1	0.539 (0.328)	12.98 (2.56)	189 (87)	63 (17)	30.3 (102.6)

REPAIRS AND ADJUSTMENTS: No repairs or adjustments

REMARKS: All test results were determined from observed data obtained in accordance with official OECD test procedures. This tractor did not meet the manufacturer's remote hydraulic flow claim of 15.0 GPM (56.9 lpm). The performance results on this summary were taken from OECD tests conducted under the Code I test procedure.

We, the undersigned, certify that this is a true summary of data from OECD Reports No. **2349** and **2350**, Nebraska Summary 573, July 10, 2007.

Roger M. Hoy
Director

M.F. Kocher
R.E. Yoder
V.I. Adamchuk
Board of Tractor Test Engineers

TN85DA- FWA(40 km/h transmission)

TIRES, BALLAST AND WEIGHT		With Ballast	Without Ballast
Rear Tires	-No., size, ply & psi (kPa)	Two 16.9R30; **,20 (135)	Two 16.9R30; **,20 (135)
Ballast	-Liquid (total)	None	None
	-Cast Iron (total)	440 lb (200 kg)	None
Front Tires	-No., size, ply & psi (kPa)	Two 11.2R24; **,17 (120)	Two 11.2R24; **,17 (120)
Ballast	-Liquid (total)	None	None
	-Cast Iron (total)	640 lb (290 kg)	None
Height of Drawbar		20.1 in (510 mm)	20.1 in (510 mm)
Static Weight with Operator	- Rear	4585 lb (2080 kg)	4300 lb (1950 kg)
	- Front	3430 lb (1555 kg)	2635 lb (1195 kg)
	- Total	8015 lb (3635 kg)	6935 lb (3145 kg)

DRAWBAR PERFORMANCE(30 km/h trans.)

BALLASTED - 2WD

FUEL CONSUMPTION CHARACTERISTICS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Fuel Consumption Hp.hr/gal (kW.h/l)	Temp.°F cool- ing med	°C Air dry bulb	Barom. inch Hg (kPa)
75% of Pull at Maximum Power—Five Hours 11th (4 M Lo) Gear									
53.2 (39.7)	3840 (17.08)	5.20 (8.37)	2380	7.1	0.499 (0.304)	14.01 (2.76)	183 (84)	50 (10)	30.2 (102.3)

MAXIMUM POWER IN SELECTED GEARS

9th (3M Lo) Gear									
45.5 (33.9)	5280 (23.48)	3.23 (5.20)	2415	15.1	0.536 (0.326)	13.05 (2.57)	180 (82)	50 (10)	30.1 (102.0)
10th (3M Hi) Gear									
54.2 (40.4)	5180 (23.05)	3.92 (6.31)	2375	14.7	0.526 (0.320)	13.30 (2.62)	178 (81)	50 (10)	30.1 (102.0)
11th (4 M Lo) Gear									
59.7 (44.5)	4750 (21.13)	4.71 (7.58)	2294	12.1	0.530 (0.323)	13.19 (2.60)	180 (82)	48 (9)	30.1 (102.0)
12th (1 Hi) Gear									
60.7 (45.3)	4375 (19.47)	5.20 (8.38)	2281	10.3	0.545 (0.331)	12.84 (2.53)	180 (82)	50 (10)	30.1 (102.0)
13th (4M Hi) Gear									
61.2 (45.6)	3810 (16.95)	6.02 (9.68)	2285	7.7	0.539 (0.328)	12.98 (2.56)	178 (81)	50 (10)	30.1 (102.0)
14th (2 Hi) Gear									
60.5 (45.1)	2770 (12.31)	8.19 (13.18)	2273	4.5	0.534 (0.325)	13.10 (2.58)	181 (83)	48 (9)	30.1 (102.0)

TN85DA-2WD (30 km/h transmission)

TIRES, BALLAST AND WEIGHT

		With Ballast	Without Ballast
Rear Tires	-No., size, ply & psi (kPa)	Two 16.9R30; **, 20 (135)	Two 16.9R30; **, 20 (135)
Ballast	-Liquid (total)	None	None
	-Cast Iron (total)	440 lb (200 kg)	None
Front Tires	-No., size, ply & psi (kPa)	Two 7.50-16; 8; 36 (250)	Two 7.50-16; 8; 36 (250)
Ballast	-Liquid (total)	None	None
	-Cast Iron (total)	640 lb (290 kg)	None
Height of Drawbar		26.4 in (670 mm)	26.4 in (670 mm)
Static Weight with Operator	-Rear	4620 lb (2095 kg)	4335 lb (1965 kg)
	-Front	2855 lb (1295 kg)	2060 lb (935 kg)
	-Total	7475 lb (3390 kg)	6395 lb (2900 kg)

TRACTOR SOUND LEVEL WITH CAB	FWA dB(A)	2WD dB(A)
At no load in 9th (3M Lo) gear	78.2	77.9
Bystander in 16th (4 Hi) gear	82.1	82.4

TRACTOR SOUND LEVEL WITHOUT CAB	FWA dB(A)	2WD dB(A)
At no load in 9th (3M Lo) gear	86.0	85.7
Bystander in 16th (4 Hi) gear	82.2	82.3

CENTER OF GRAVITY - 2WD		
Horizontal distance forward from centerline of rear wheels	29.0" (737 mm)	
Vertical distance above roadway	37.4" (950 mm)	
Horizontal distance from center of rear wheel tread	0.1" (3 mm) to the left	

CENTER OF GRAVITY - FWA		
Horizontal distance forward from centerline of rear wheels	33.1" (840 mm)	
Vertical distance above roadway	36.7" (933 mm)	
Horizontal distance from center of rear wheel tread	0.3" (8 mm) to the left	

TURNING ON A CONCRETE SURFACE (2WD)		
Turning radius—without brake right 144" (3.66 m) left 145" (3.68 m)		
Turning space radius—without brake right 148" (3.76 m) left 149" (3.78 m)		

TURNING ON A CONCRETE SURFACE (FWA)		
Turning radius—without brake right 151" (3.83 m) left 151" (3.84 m)		
Turning space radius—without brake right 156" (3.97 m) left 157" (3.98 m)		

THREE POINT HITCH PERFORMANCE (OECD Static Test)

CATEGORY: II

Quick Attach: None

Maximum force exerted through whole range: 4145 lbs (18.45 kN)

i) Sustained pressure with relief valve open: 2890 psi (199 bar)

ii) Pump delivery rate at minimum pressure: 12.9 GPM (49.0 l/min)

iii) Pump delivery rate at maximum

hydraulic power: 11.4 GPM (43.3 l/min)

Delivery pressure: 2600 psi (179 bar)

Power: 17.3 hp (12.9 kW)

THREE POINT HITCH PERFORMANCE (SAE Static Test)

Observed maximum pressure psi. (bar) 2980 (205)

Location: remote outlets

Hydraulic oil temperature: °F (°C) 113 (45)

Location: hydraulic sump

Category: II

Quick attach: none

System pressure 2680 psi (185 Bar)

Hitch point distance to ground level in. (mm) 17.7 (449) 21.9 (555) 26.2 (665) 30.1 (764) 34.5 (877) 38.7 (984)

Lift force on frame lb 6135 6385 6160 5845 5505 5215

" " " " " " (kN) (27.3) (28.4) (27.4) (26.0) (24.5) (23.2)

HITCH DIMENSIONS AS TESTED—NO LOAD

	SAE TEST		OECD TEST	
	inch	mm	inch	mm
A	27.2	690	27.4	697
B	10.0	255	10.0	255
C	12.3	312	12.3	312
D	10.9	276	10.9	276
E	14.2	361	12.1	308
F	7.5	189	7.5	189
G	27.6	700	27.6	700
H	1.4	35	1.4	35
I	13.4	340	13.6	345
J	20.1	511	20.1	511
K	20.6	523	20.6	523
L	40.7	1035	40.7	1035
M	21.7	550	21.7	550
N	34.6	880	34.6	880
O	17.7	449	14.8	376
P	40.2	1021	44.1	1121
Q	38.7	984	40.0	1016
R	22.4	570	22.5	572

